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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,342	06/24/2005	Takayuki Matsushima	17155/003001	5910
22511 7590 07/15/2009 OSHA LIANG I.L.P. TWO HOUSTON CENTER 909 FANNIN, SUITE 3500 HOUSTON, TX 77010				
EXAMINER				
GOFF II, JOEIN L				
ART UNIT		PAPER NUMBER		
1791				
NOTIFICATION DATE		DELIVERY MODE		
07/15/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/505,342

Applicant(s)

MATSUSHIMA ET AL.

Examiner

John L. Goff

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4, 5, 7 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 7 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/29/09 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 4, 5, 7, and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 as amended requires the second curing agent “does not include an epoxy resin”. It is unclear where in the specification the second curing agent is described as not including an epoxy resin. All of the examples of the specification include epoxy resin in the

second curing agent. Further, claim 7 requires the second curing agent including an epoxy resin. It does not appear that the specification describes the limitation in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the second curing agent not including specifically epoxy resin.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 7 requires the second curing agent include an epoxy resin. Claim 7 depends from claim 1 which requires the second curing agent does not include epoxy resin. The claim is interpreted as requiring the thermosetting resin of the adhesive is an epoxy resin.

Claim Rejections - 35 USC § 103

8. Claims 1, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-026235 (See the abstract and machine translation) or JP 11-343474 (See the abstract and machine translation) in view of JP 62-004769 (See the abstract), JP 09-330947 (See the abstract and machine translation), and optionally JP 61-078822 (See the abstract).

JP 07-026235 discloses a method for adhering first and second objects to produce an electrical device. JP 07-026235 teaches an adhesive containing a thermosetting epoxy resin, a first curing agent of a silane coupling agent, a second curing agent of an aluminum chelate, and electrically conductive particles is positioned between the first and second objects, and the

adhesive is cured via cationic polymerization from cations developed by reaction of the silane coupling agent and aluminum chelate when heated (See abstract and Paragraphs 0007 to 0016). JP 11-343474 discloses a method for adhering first and second objects to produce any type of device including those of metal. JP 11-343474 teaches an adhesive containing a thermosetting epoxy resin, a first curing agent of a silane coupling agent, a second curing agent of an aluminum chelate, and electrically conductive particles is positioned between the first and second objects, and the adhesive is cured via cationic polymerization from cations developed by reaction of the silane coupling agent and aluminum chelate when heated (See abstract and Paragraphs 0006 to 0012, 0017, and 0021). JP 07-026235 and JP 11-343474 do not teach applying the epoxy resin, first curing agent, and electrically conductive particles to the first object, applying the second curing agent to the second object and mixing the two layers by tightly contacting the first and second objects to cure the adhesive. However, it was well known in the art of using adhesives containing a thermosetting epoxy resin and a curing agent to adhere two objects that by applying the thermosetting epoxy resin to the first object and the curing agent to the second object provides the adhesive with a long shelf life that is cured when desired by mixing when the first and second objects are tightly contacted as evidenced by JP 62-004769 (See abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the adhesive taught by JP 07-026235 or JP 11-343474 as shown by JP 62-004769 to extend the shelf life of the adhesive and cure the adhesive when desired. Thus, JP 07-026235 or JP 11-343474 as modified by JP 62-004769 teaches applying to the first object the epoxy resin, the first or second curing agent, and the electrically conductive particles and applied to the second object the other of the first or second curing agent not applied to the first object, it being noted that the

first and second curing agents must be applied separately to the first and second objects as it is the reaction of the first and second curing agents that cures the epoxy resin. Applicants have not shown any criticality for either of the first or second curing agents included with the epoxy resin. There are only two possibilities, i.e. the epoxy resin, the first curing agent, and the electrically conductive particles are applied to the first object or the epoxy resin, the second curing agent, and the electrically conductive particles are applied to the first object. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include with the epoxy resin and electrically conductive particles applied to the first object either of the first or second curing agents absent some unexpected result wherein JP 61-078822 is optionally further cited (See abstract) as demonstrating an adhesive comprising thermosetting epoxy resin, a first curing agent of a silane coupling agent, and a second curing agent of an aluminum chelate mixed for curing from two parts wherein the first curing agent is included with the epoxy resin in the first part.

It is unclear if JP 07-026235 teaches the first object includes a first electrode and the second object includes a second electrode, it being noted JP 07-026235 teaches the first and second object produce an electrical device such as that including a semiconductor device and appears to suggest at least one of the objects includes an electrode. JP 11-343474 does not teach the first object includes a first electrode and the second object includes a second electrode, it being noted JP 11-343474 is not limited to forming any particular device. JP 09-330947 discloses a method for producing an electrical device such as a semiconductor device connected to a display panel or circuit board comprising arranging an adhesive layer (5 of Figure 1) containing a curable resin and electrically conductive particles (4 of Figure 1) added to the

adhesive from the outset on a first electrode (3 of Figure 1) of a first object (7 of Figure 1), arranging an adhesive layer (6 of Figure 1) on a second electrode (2 of Figure 1) of a second object (1 of Figure 1), positioning the first and second electrodes of the first and second objects in register with each other, tightly contacting the adhesive layer on the first object with the adhesive layer on the second object, thrusting the first and second objects against each other to interconnect the first and second electrodes via the electrically conductive particles placed between the electrodes (Figures 2-4), and allowing the curable resin to be polymerized by heating (See Figures 1-4 and the abstract and paragraphs 10-14 of the machine translation). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the first and second objects taught by JP 07-026235 or JP 11-343474 as modified by JP 62-004769 a semiconductor device and a display-panel or circuit board including electrodes as such was the known use for adhesives such as that taught by JP 07-026235 or JP 11-343474 as evidenced by JP 09-330947. It is further noted it appears JP 11-343474 teaches the inclusion of aluminum paste considered conductive particles. However, in the event it is shown that JP 11-343474 does not necessarily teach including electrically conductive particles the following rejection would apply. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the adhesive taught by JP 11-343474 as modified by JP 62-004769 and JP 09-330947 include electrically conductive particles when forming a display-panel or circuit board as JP 09-330947 teaches the adhesive include conductive particles to electrically connect the semiconductor and display-panel or circuit board.

As to the limitation of "thrusting and heating said first and second objects against each other to soften said adhesive layer and mix said first and second curing agents for putting said

electrically conductive particles between said first and second electrodes” and “further thrusting and heating said first and second objects to develop a cation by reaction of said silane coupling agent as a main component of said first curing agent and said aluminum chelate as a main component of the second curing agent to allow said thermosetting resin to be cationically polymerized”, JP 07-026235 or JP 11-343474 as modified by JP 62-004769 and JP 09-330947 teaches pressing and heating the adhesive during cure, e.g. at 200 °C for JP 07-026235 a temperature above the softening point of the epoxy resins disclosed in paragraph 0009 of JP 07-026235 or at less than 150 °C for JP 11-343474 a temperature above the softening point of the epoxy resins disclosed in paragraph of JP 11-343474, wherein because the adhesive and method taught is consistent and in agreement with that claimed and disclosed by applicants specification as resulting in softening of the adhesive layer, mixing of the first and second curing agents to develop a cation by reaction of the agents, and cationically polymerizing the epoxy resin one of ordinary skill would readily expect that taught by JP 07-026235 or JP 11-343474 as modified by JP 62-004769 and JP 09-330947 to perform the same. Further, because JP 07-026235 or JP 11-343474 as modified by JP 62-004769 and JP 09-330947 includes cationically polymerizing the epoxy resin via cations produced by reaction of the first and second curing agents there must be a step of mixing considered the first thrusting and heating step and there must be a step of reacting considered the further thrusting and heating step.

Regarding claim 8, JP 07-026235 and JP 11-343474 teaches the adhesive may be applied in solvent as a liquid dispersion. Claim 8 is not considered to expressly require the dispersion is sprayed. In the event it is shown that such is necessarily required the following rejection would apply. It is considered extremely well known in the art to apply a dispersion by spraying such

that it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the adhesive layers as taught by JP 07-026235 or JP 11-343474 using any well known technique in the art such as spraying as only the expected results would be achieved.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-343474 in view of JP 62-004769, JP 09-330947, and optionally JP 61-078822.

JP 11-343474 is modified by JP 62-004769, JP 09-330947, and optionally JP 61-78822 the same as that set forth above wherein it is further noted JP 11-343474 teaches the aluminum chelate may be ethylacetoacetate aluminum diisopropylate.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-026235, JP 62-004769, JP 09-330947 and optionally JP09330947 as applied to claims 1, 7, and 8 above, and further in view of JP 11-343474.

JP 07-026235 as modified above teaches all of the limitations in claim 4 except for a specific teaching that the aluminum chelate comprise ethylacetoacetate aluminum diisopropylate, it being noted JP 07-026235 is not limited to any particular aluminum chelate and suggest a number of possibilities. JP 11-343474 directed to an adhesive similar to that of JP 07-026235 teaches a number of aluminum chelates including those described by JP 07-026235 and ethylacetoacetate aluminum diisopropylate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the aluminum chelate in JP 07-026235 ethylacetoacetate aluminum diisopropylate a known alternative to the aluminum chelates disclosed by JP 07-026235 as evidenced by JP 11-343474 only the expected results being achieved.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-026235 in view of JP 62-004769, JP 09-330947, and optionally JP 61-78822.

JP 07-026235 is modified by JP 62-004769, JP 09-330947, and optionally JP 61-78822 the same as that set forth above wherein it is further noted JP 07-026235 appears to teach the silane coupling agent is as required in claim 5.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-026235 or JP 11-343474 and JP 62-004769, JP 09-330947, and optionally JP09330947 as applied to claims 1, 7, and 8 above, and further in view of JP 09-067427 (See also the abstract).

It is unclear if JP 07-026235 or JP 11-343474 teaches the silane coupling agent is represented by the claimed formula and includes an alkoxy group and an epoxy ring containing glycidyl group. It is well taken in the art that silane coupling agents for use in epoxy resins have the claimed formula and include an alkoxy group and an epoxy ring containing glycidyl group as shown by JP 09-067427 (See abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the silane coupling agent in JP 07-026235 or JP 11-343474 as modified by JP 62-004769, JP 09-330947, and optionally JP09330947 those having the well taken form of including an alkoxy group and an epoxy ring as shown by JP 09067427 only the expected results being achieved.

Response to Arguments

13. Applicant's arguments with respect to claims 1, 4, 5, 7, and 8 have been considered but are moot in view of the new ground(s) of rejection.

In view of the amendment the rejections over JP 09-330947 (See also the machine translation and abstract) as the primary reference are withdrawn.

The certified English translation of JP 2002-044232 has been received and reviewed. The translation is sufficient to overcome a rejection over Matsushima (U.S. Patent Application Publication 2002/0151627) applied under 35 USC 102(a).

Applicants argue, "However, in the method described in JP '769, if curing starts at the contact interface without sufficient mixing, the adhesive layer might be cured before the conductive particles are put between the electrodes. This insufficient mixing and movement of the conductive particles may result in a poor connection between the electrodes such that high connection reliability cannot be realized.".

The new limitations are addressed above it being noted that because JP 07-026235 or JP 11-343474 as modified by JP 62-004769 and JP 09-330947 includes cationically polymerizing the epoxy resin via cations produced by reaction of the first and second curing agents there must be a step of mixing considered the first thrusting and heating step and there must be a step of reacting considered the further thrusting and heating step.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571)272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John L. Goff/
Primary Examiner, Art Unit 1791